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SPECIAL YAWNING ISSUE

Shoes and Schizophrenia

Other Einsteins

...and much MORE!

ANNALS OF IMPROBABLE RESEARCH

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Other Einsteins (Part 1)
by A.S. Kaswell, with Jessica Girard, AIR staff

People say “There is only one Einstein,” but of course that is not so. In this, the official, “Einstein Year,” when everyone celebrates Albert Einstein, let us not forget some of the other Einsteins.

Einstein’s Pork Carcass Composition Equations

Albert Einstein has a signature equation, \( e=mc^2 \), which predicts how energy relates to mass. M.E. Einstein of Purdue University in West Lafayette, Indiana, has a whole set of equations, which predict pork carcass composition.


Einstein’s Turkey Sperm Quality Analyser

Einstein is also known, of course for the doubly-seminal “Utilisation of a Sperm Quality Analyser to Evaluate Sperm Quantity and Quality of Turkey Breeders.” It was published in 2002 in the journal British Poultry Science.

More to Come

In the next several issues of AIR, we will lovingly look at some other Einsteins.
The features marked with a star (*) are based entirely on material taken straight from standard research (and other Official and Therefore Always Correct) literature. Many of the other articles are genuine, too, but we don’t know which ones.

Special Section: Yawning

4 On Yawning; or, The Hidden Sexuality of the Human Yawn* -- Wolter Seuntjens
10 Experiments in Yawning* -- R.G. Briskett
13 Solution to Last Issue’s Puzzler
17 A Smattering of Yawns* -- Emil Filterbag

Improbable Research

IFC Other Einsteins* (Part 1) -- A.S. Kaswell, with Jessica Girard
24 Do Copied Citations Create Renowned Papers?* -- M.V. Simkin and V.P. Roychowdhury
29 Textbook Disclaimer Stickers -- Colin Purrington

Recommended Research*

8 AIRhead Research Review* -- Dirk Manley
9 Fresh Pond Gas* -- Emil Filterbag
14 Soft is Hard* -- Alice Shirrell Kaswell, G. Neil Martin, and Bissell Mango
16 May We Recommend* -- Stephen Drew
18 Icky Cutesy Research Review * -- Alice Shirrell Kaswell
19 Boys Will Be Boys* -- Katherine Lee
20 AIRhead Medical Review* -- Bertha Vanatian
21 Trouble Underfoot* -- Bertha Vanatian

On the Front Cover
A study in the journal Medical Hypotheses explains that wearing heeled shoes puts one at risk of becoming schizophrenic. Photo: Alice Shirrell Kaswell/AIR.

On the Back Cover
Small change on top of a 2004 psychology research report titled “Toward a Descriptive Model of Small Change.” Photo: Stephen Drew/AIR.

News & Notes

2 AIR Vents (letters from our readers)
15 Socially Scientific -- Robin Abrahams
16 HMO-NO News: Relief Therapy!
22 Ig Nobel Keynote Speeches*
28 Teachers’ Guide
28 AIR books
30 Bends on the Learning Curve -- Richard Lederer
31 “How They Moved” -- Nick Kim
31 Back Issues
IBC Unclassified Ads

Coming Events
(see WWW.IMPROBABLE.COM for details of these and other events)
AAAS Annual Meeting, Washington, DC
-- FEB 18, 2005
Ig Nobel Tour of U.K. for National Science Week
-- MAR 11-20, 2005
Museum Of Science, Boston, MA -- APR 1, 2005
I-CON 24 - Stony Brook, NY -- APR 8-10, 2005
Ig Nobel Tour of Australia for National Science Week -- AUG 2005
Cascadiacon, Seattle, WA -- SEPT 1-5, 2005
Ig Nobel Prize Ceremony -- OCT 6, 2005

Every Weekday
Read something new and improbable every weekday on the Improbable Research blog, on our web site: WWW.IMPROBABLE.COM
AIR Vents

Exhalations from our readers

NOTE: The opinions expressed here represent the opinions of the authors and do not necessarily represent the opinions of those who hold other opinions.

Yawn Transmission

We have observed that yawning can be transmitted across species. Yawns from domestic pet animals -- for example, a three-year-old neutered male German Shepherd dog who stretches and yawns while rising -- are not infrequently followed by yawns from human beings who are in the same room. Very roughly, transmissibility appears to be highest from dogs, less so from cats, and still less from lizards and goldfish. Also, human vulnerability seems to be higher from a person's own pet than from a stranger's. While clinical trials involving humans would be difficult to justify at this stage, the epidemiology of this phenomenon can and should be investigated. For this reason we have initiated the Zoonotic Yawn Project (ZYP), in contribution toward which we invite readers to send us anecdotal data of their own.

Oliver Baker, Ph.D.
Sophie Petersen, DVM, Ph.D.
Raleigh, NC

[EDITOR'S NOTE: Please send data c/o “AIR Zoonotic Yawn Project” at our usual address.]

The Arcieri Hypothesis

Franz Naegle wrote a handbook for midwives called *Lehrbuch der Geburtshilfe Fuer Habammen*, in the mid-nineteenth century. Naegle’s Rule, found in that traditional reference, states that the average human gestation period is 266 days. This has been, and still is by some, believed to be true. A more recent investigation, however, found the average pregnancy to last 274 days (“The Length of Uncomplicated Human Gestation,” R. Mittendorf, et al., *Obstetrics and Gynecology*, vol. 75, 1990, pp. 929-32). New evidence presented here suggests the latter contention is true, therefore resolving this debate.

It was recently reported that the most common birthday in America is October 5th (see the October 5, 2004 issue of The Free Lance Star). That date is 274 days after New Years Eve. A strong argument can be made supporting the notion that alcohol-influenced social disinhibitions on that evening lead to increased sexual activity. Therefore, the Arcieri Hypothesis indicates that the increase in birthrate on October 5th is meaningful evidence that the average human gestation period is 274 days.

D.T. Arcieri
Biology Department
SUNY Farmingdale
Farmingdale, NY

[EDITOR’S NOTE: The author later informed us that his birthday is October 5.]
Knows Better

Not having purchased a full subscription to *New England Journal of Medicine* I haven’t access to the article “Amebiasis from the ‘Miraculous Water of Taclote.’” Nonetheless I’ve taken taclo tablets for three years and have suffered no ill effects. In fact I’ve found it most helpful. Millions of people have availed themselves of the water, either in liquid or homeopathic form. Where is the evidence of a health issue precipitated by ingesting this water? I submit the case of Amebiasis cited above was from another water source. Thus I find the Improbable Research article [on the web site, written in 2001] fits well under the heading of “hot air.” A New Light is entering the World. Find out more at: http://www.share-international.org.

David E. Mynott II
Boston, MA

Banatwala and the Law

[EDITOR’S NOTE: We are well aware that all of our readers have access to an endless list of variants of Murphy’s Law, Parkinson’s Law, the Peter Principle, etc. Despite the fact that we are publishing this letter, we ask that you please refrain from inundating us with similar laws. Please.]

Murphy’s Law (whose creators won a 2003 Ig Nobel Prize) is not the only law of the universe. I would like to submit Banatwala’s Law of Meetings for your consideration: “The value of a meeting is inversely proportional to the number of people in attendance.” To the best of my knowledge it is original with me, but like a good engineer I stand ready to be shown the error of my ways. I have been promulgating this law ever since, one fine day about 20 years ago, I got out of a project meeting. The meeting was attended by over 70 people and I realized that only a precious few of us had had anything to say. I also realized that we had, after a full day of deliberation and considerable quantities of good food, only achieved agreement on the need to continue the meeting the next day. I also submit to you that my Law is an exception to the rule that says “Exceptions prove the rule.” My law admits of no exceptions.

Zainuddin M. Banatwala
Houston, TX

Flipped Ostrich

There is an expression commonly heard in Australia, now sadly a disappearing part of our Strine language, which is “Struth!!” (sometimes spelt Strewth). It is an exclamation, a contraction of “God’s Truth,” and it can mean anything from a mild “Gosh” to something like a cleaned-up version of “Holy Sh-t!” But Struth!! You’ve stuffed up the pictures of Struthio!! In the article “Don’t Fancy Yours Much -- Mine’s the Big Bird With the Long Legs” (AIR 9:4), by 2002 Ig Nobel Biology prizewinner D. Charles Deeming, Figures 1 and 2B in the article are transposed. The male ostrich (Struthio camelus) should be in Figure 1. The way he appears in Figure 2B, I certainly wouldn’t like to come and get me, big boy!!!

Alan Moskwa
Kensington Park
Australi
On Yawning; or, The Hidden Sexuality of the Human Yawn

by Wolter Seuntjens
Vrije Universiteit Amsterdam, The Netherlands

[EDITOR’S NOTE: This is a specially abridged version of the Ph.D. dissertation which the author defended (successfully!) on October 27, 2004. Dr. Seuntjens can be reached at <seuntjens@baillement.com>. The web site www.baillement.com is a lavish compendium of information about yawning.]

In science, the yawn has not received its due attention. In this investigation I provide (1) a systematic-encyclopedic overview of all available knowledge about yawning. The fields from which I derive my data are linguistics (semantics, etymology), sociology, psychology, the medical sciences (anatomy, physiology, pathology, and pharmacology), and the arts (literature, film, visual arts). Then, I (2) associate a number of these data in order to (3) test the hypothesis that yawning has an erotic side, a sexual aspect.

A Taboo, an Unsolved Riddle

The mass of data that I present in the encyclopedic overview makes one thing clear: there is no good explanation for yawning.

As regards physiology: the hypoxia and hypercapnia theories -- these long-untested theories that also figure prominently in common-sense notions -- were conclusively refuted by Robert Provine and his collaborators (Provine, Tate, and Geldmacher 1987). The now popular theory that yawning leads to wakefulness (‘arousal defense reflex,’ Askenasy 1989) is not without its problems (Regehr, Ogilvie, and Simons 1992).

In the paragraphs on pathology and pharmacology I enumerate so many different illnesses and disorders that are associated with increased yawning that for the moment it is impossible to extract a common factor. The same goes for the very many chemical substances that induce yawning (Crenshaw and Goldberg 1996: 415; Argiolas and Melis 1998: 12). What this common pharmacological factor, if there is one, constitutes, remains unclear.
In the chapter on the psychology of yawning I discuss various subthemes of which the most concrete are: contagiousness, non-verbal behavior, and conditionability. Neither of these subthemes has been completely clarified. Psychologically, too, the yawn is still very much an unsolved riddle.

In the chapter on the sociology of the yawn I note that the yawn is (quasi-)universally taboo. The reason why this is so remains shrouded in mystery: the various rationales given -- superstitious, hygienic, aesthetic, psychological -- are all implausible. The ethological rationale (bared teeth) may turn out to provide the best explanation for the taboo of yawning.

As a preliminary conclusion we may therefore state that Reber’s Law applies perfectly to the hitherto considered trivial behavior of yawning: the closer the yawn is examined, the more complex it is seen to be (Reber 1985: 618). In fact, we have really no idea what causes yawning and what purpose yawning serves or what mechanisms are responsible for yawning and even what the essential anatomical constituents of yawning are. In the age in which the human genome has been deciphered and space travel has become almost trite this verdict may sound like an affront.

**Eroticism-Sexuality**

Yet, in the light of the hypothesis that yawning has an erotic side, it becomes clear that in the data that I gathered there is at least one recurrent theme: eroticism-sexuality.

I found that both the ‘yawn’ and the ‘stretch’ of the stretch-yawn syndrome (SYS) are semantically and etymologically associated with ‘desire’ and ‘longing for’ (de Vries 1991: 142).

In several proverbs and sayings yawning -- and especially contagious yawning -- is interpreted as a clue of something more than just sympathy, that is, as a sign of being in love (Schloessar 1891: 402; Hand 1981, no. 12964; Beyer 1985: 187).

Yawning was both linked with acedia-boredom and with *luxuria* (lechery) and passion. As a non-verbal behavior the yawn was found to figure -- be it consciously or unconsciously -- in the courtship process (Howell 1659: 14; Mantegazza 1890: 126; Fére 1905; Givens 1978). That this is not a purely recent or western phenomenon was illustrated by passages from ancient Indian literature (Vatsyayana 1965; Biharilal 1990; Kesavadasa 1993).

Not surprisingly perhaps, the few psychoanalysts and depth-psychologists who did mention the yawn interpreted it as a latent sexual signal (Meerloo 1955: 65; Marcus 1973; Felstein 1976).

Ethological studies in primates found a clear relationship between yawn-frequency and hierarchical status (Bielert 1978; Hadidian 1980; Deputte 1994) and between yawn-frequency and the serum level of testosterone (Chambers and Phoenix 1981).

In discussing anatomy and physiology I recounted that Chouard and Bigot-Massoni (1990: 146, 152) described the feeling that accompanies the acme of yawning as a ‘mini orgasm’. Moreover, the same authors concluded: “Let us remember in conclusion its intimate and unconscious relation with sexual life, […].” (ibidem).

In discussing pathology I discovered that yawning and spontaneous ejaculation were mentioned concomitantly in terminal rabies (Beek 1969: 127).

In discussing pharmacology I found a link between yawning and spontaneous orgasm in withdrawal from heroin addiction (Parr 1976). Likewise, yawning and sexual response (SR) were associated as clinical side effects of several antidepressant drugs. In one publication an undeniable causal relation was reported: both spontaneous and intentional yawning provoked instantaneous ejaculation-orgasm (McLean, Forsythe, and Kapkin 1983). In experiments with animals many more substances were seen to induce, sometimes simultaneously, both SYS and SR. Moreover, in humans apomorphine induces both SYS and SR (Lal et al. 1989).

In the chapter on yawning and the arts, I discussed, in a somewhat more conjectural manner, the conspicuously erotic sigh and the equally erotic posture X. I argued for the interpretation of the sigh and posture X as the auditory and visual proxies for the SYS.

**My Conclusions About Yawning**

It is because of the critical mass of circumstantial evidence that was accumulated that all these data, passages, and quotations take on an ambivalent or double meaning. Nowhere is that clearer than in the use of the words ‘yawning’ and ‘stretching’ in the poetry of W. B. Yeats (1989 [1929]: 379), as for instance in:

> O cruel Death give three things back,
>  […]
Three dear things that women know,
[...]
The third thing that I think of yet,
[...]
Is that morning when I met
Face to face my rightful man
And did after stretch and yawn.

And what to think of the following passage taken from *The Prime of Miss Jean Brodie* by Muriel Spark (1967 [1961]): 59 in which the pupils Jenny and Sandy discuss their teacher’s love life?

For this reason she was more reticent than Jenny about the details of the imagined love affair. Jenny whispered, ‘They go to bed. Then he puts out the light. Then their toes touch. And then Miss Brodie… Miss Brodie…’ She broke into giggles.

‘Miss Brodie yawns,’ said Sandy in order to restore decency, now that she suspected it was all true.

This, of course, does not mean that every yawn can be interpreted as erotic or even sexual: “There are times when a yawn is simply a yawn.” (Even if a ‘simple’ yawn is not simple at all.)

In ‘The Thinking of Thoughts: What is *Le Penseur* Doing?’ Gilbert Ryle (1971: 480) presented the example of the blink of an eye to illustrate the necessity to interpret individual behavioral acts. Equally, we cannot but interpret every individual yawn as the occasion arises. In everyday life each and every individual yawn must be interpreted, as it cannot be ascribed to one specific cause, or be explained with total certainty. Likewise, we face a ‘prediction barrier’ in experiment and observation when predicting individual yawns.

In summary, the two foremost conclusions of my investigation are (1) the yawn is -- contrary to common-sense ideas -- far from trivial; yawning is an extremely complex behavior. (2) The yawn -- and this clashes even more with common-sense notions -- appears to have an erotic side, a sexual aspect.

**Bibliography**


*Physiognomy and Expression*, Paolo Mantegazza, London: Scott, 1890.


The phenomenon of yawning has been celebrated by songwriters, as well as scientists. This sheet music, for Harry Banks “Yawning Song,” was published in 1882.
AIRhead Research Review

Improbable theories, experiments, and conclusions

compiled by Dirk Manley, AIR staff

Swimming in Syrup

“Will Humans Swim Faster or Slower in Syrup?” Brian Gettelfinger and E. L. Cussler, American Institute of Chemical Engineers Journal, vol. 50, no. 11, October 2004, pp. 2646-7. (Thanks to Helen Pilcher for bringing this to our attention.)

Sex and Experience: Movie Stars


Buckley’s Exploding Trousers

“The Significance of Mr. Richard Buckley’s Exploding Trousers: Reflections on an Aspect of Technological Change in New Zealand Dairy-Farming between the World Wars,” James Watson, Agricultural History, vol. 78, no. 3, Summer 2004, pp. 346-60. (Thanks to Stephanie Pain in New Scientist for bringing this to our attention.)

The author, who is at Massey University, Palmerston North, New Zealand, reports that:

On August 12, 1931, the Hawera Star, a local newspaper in southern Taranaki, on the North Island of New Zealand, reported that, “While Mr. Richard Buckley’s trousers were drying before the fire recently they exploded with a loud report. Although partially stunned by the force of the explosion, he had sufficient presence of mind to seize the garments and hurl them from the house, where they smouldered on the lawn with a series of minor detonations.” Similar reports came in from other parts of the country. One individual was shocked to observe a newly hung-out load of washing burst into flame on the clothes-line. Numerous farmers and farm workers discovered for the first time that smoking could be hazardous to their health as items of their clothing lit up when they did. In a New Zealand version of “blazing saddles,” one farmer found that the seat of his pants was starting to smoulder as he was riding his horse.

Sodium chlorate is a white crystalline solid that became popular as a weedicide on New Zealand farms during the early 1930s, being adopted with startling rapidity particularly in the North Island. In 1930 imports of the chemical were negligible; by 1937 one thousand tons were brought into the country annually. Sodium chlorate is an extremely volatile substance often used as an explosive. Sodium chlorate is especially dangerous when mixed with organic matter, such as the fibers of wool or cotton.

We welcome your suggestions for this column. Please enclose the full citation (no abbreviations!) and, if possible, a photocopy of the paper.
Fresh Pond Gas

by Emil Filterbag, AIR staff

Fresh pond gas is more popular than ever in the scientific community. Here are three of the most compelling research reports about pond gas -- fresh and otherwise -- published during the past decade.

Bubbly Gas


Fermentation and Fate


With or Without Sludge

Yawning has induced tremendous enthusiasm among scientists. These particular scientists are small in number, partly because funding for yawn experiments is rather limited. Despite the dearth of laboratories, equipment, professorships, or prize money dedicated to the subject, yawning can be of great appeal to an experimentalist. A yawn is rather mysterious -- a gaping, black hole that invites anyone -- anyone of a certain sensibility, that is -- to come, take a look, and take a poke at teasing out some of its secrets.

Here are a few of the many experiments that have been documented.

**Yawning in Church and in School**

Joseph E. Moore of the Jesup Psychological Laboratory at George Peabody College in Nashville, Tennessee conducted several key experiments more than a half-century ago:


Moore’s key findings are revelatory:

In this investigation trained yawners apparently stimulated college students in assemblies and libraries to yawn as well as church goers in both the morning and evening services.

The phonograph record stimulated some of the blind subjects but few of the graduate nurses to yawn.

Motion pictures of a girl yawning seemed to initiate the yawning reflex in several students taking general psychology.
Yawning at Temple

Ronald Baenninger is a professor of psychology at Temple University in Philadelphia. He is a former engineer, and is now editor-in-chief of the research journal *Aggressive Behavior*. Professor Baenninger has conducted a number of yawning experiments. Much of this yawning occurred in Temple students. One of Baenninger’s most basic experiments reflects an engineer’s appreciation of proper measurement. Because later experiments would depend on having students observe, record, and report their own yawns, he performed a calibration. This gave him a gauge that was useful in later experiments. Details can be found in:

“Self-Report as a Valid Measure of Yawning in the Laboratory,” Monica Greco and Ronald Baenninger, *Bulletin of the Psychonomic Society*, vol. 27, no. 1, January 1989, pp. 75-6. The basic assessment technique was simple:

30 undergraduate students were assigned to 1 of 2 groups that recorded their own yawns either in complete privacy or videotaped through a 2-way mirror.

Having ascertained how much he could trust what his students would report about their own experiences, Professor Baenninger, together with his colleagues, threw himself into a full-bore examination of when, where, and why students yawn. The trio of Greco, Baenninger and Govern published its results in 1993:


From personal logs kept by 28 subjects of their yawning during 1 week we found that yawns occurred during the hours of transitions between sleeping and waking. During the day yawns were associated with attending class, driving, studying or reading, and watching television. A survey of a much larger sample of subjects disclosed some agreement, but several discrepancies between what respondents believed about their yawning and the actual behavior of those subjects who kept logs.

Professor Baenninger later drew on these, and other, findings to publish a wonderful bedtime read:


One of the studies, especially, set the tone that research need not be conducted only in a laboratory:

“Field Observations of Yawning and Activity in Humans,” Ronald Baenninger, Sue Binkley and Maryann Baenninger, *Physiology and Behavior*, vol. 59, no. 3, March 1996, pp. 421-5. The three authors report a memorable discovery that might have eluded scientists who study only lab animals:

More yawning occurred during the week than during weekends.

The Binkley who teamed up with Baenninger for that 1996 experiment is the same Binkley who produced two of the best-loved (if not always best-appreciated) studies on the subject of human physiological rhythms:


and


Do Men Yawn More Than Women?

Men are not women, and women are not men. Two researchers in Rome, Italy -- Gabriele Schino of Istituto di Psicologia del CNR, and Filippo Aureli at Università di Roma “La Sapienza” -- noticed this key difference. They formulated a hypothesis, and then set out to test it:


Tested the hypothesis that the sex differences in the frequency of yawning are related to sexual dimorphism in canine size, using human passengers on the Rome underground in Italy. The relative percentages of males and females present during data collection were 59.3% and 40.7%, respectively. A total of 267 yawns by 221 different persons (57.9% males, 42.1% females) were recorded. Males and females, unlike several nonhuman primate species, did not differ in the frequency of yawning, although uncovered yawns were more frequent in
men than in women. It is suggested that sex differences in frequency of yawning by primates may be related to the sex dimorphism in canine size.

**Probing the Yawns of Boredom**

Robert R. Provine of the University of Maryland (an institution that in fact has two Robert Provines) is known for his many studies of laughter. Perhaps of greater import, Provine has also delved deep into yawning, producing several publications.


The hypothesis that subjects yawn more while observing uninteresting than while observing interesting stimuli was tested by comparing the yawns produced by 32 male and female college freshmen while they observed a 30-minute rock video -- a complex and interesting audiovisual stimulus -- and a 30 min color-bar test pattern without an audio track, an unchanging and very uninteresting stimulus. Significantly more and longer yawns were produced during the uninteresting stimulus than during the interesting stimulus, and males had longer yawns than females. The folk belief that people yawn more during boring than interesting events was confirmed.

Provine also squarely faced up to an ancient question, one that’s been much debated on all levels of society:


360 psychology students were divided into 12 experimental groups and participated in a single experimental session. The yawn-evoking potency of variations in a 5-min series of 30 videotaped repetitions of a yawning face were compared with each other and with a series of 30 videotaped smiles to determine the ethological releasing stimulus for the fixed-action pattern of yawning and to understand the more general process of face detection. Animate video images of yawning faces in several axial orientations evoked yawns in more Subjects than did featureless or smiling faces, and no single feature, such as a gaping mouth, was necessary to evoke yawns. The yawn recognition mechanism is neither axially specific nor triggered by an isolated facial feature.

**The Stimulation of Reading**

Mary Carskadon of Brown University in Providence, Rhode Island read about Robert Provine’s experiments. Thus stimulated, Carskadon set herself a goal: “to examine whether reading about yawning is a specific releaser of yawning or reading about opening the mouth for another purpose might effective as well.” And she met that goal:


While seated in a large auditorium, students ... were given one of two brief passages to read, with instructions to “remain absolutely quiet and do not look around the room” while reading. ... One passage (“Yawn”) described yawning... The second (“Open Wide”) ... described tonsils and tonsillitis in the context of explaining why a doctor says “open wide and say ah”. ... Subjects were then requested...
to answer questions about whether they yawned, were tempted to yawn, did not yawn, or could not remember having yawned while reading the text. ... Reading about yawning was significantly more likely to elicit yawning behavior than reading about opening the mouth per se.

**Chimpanzee See, Chimpanzee Do**

Other scientists, too, were stimulated by Robert Provine’s research. A team of British and Japanese researchers showed that some of Provine’s findings apply to more than just human beings. This was something mildly unusual in modern science -- scientists trying to replicate in experiments with chimpanzees something that they had first seen in experiments with humans:


Six adult female chimpanzees were shown video scenes of chimpanzees repeatedly yawning or of chimpanzees showing open-mouth facial expressions that were not yawns. Two out of the six females showed significantly higher frequencies of yawning in response to yawn videos; no chimpanzees showed the inverse. Three infant chimpanzees that accompanied their mothers did not yawn at all. These data are highly reminiscent of the contagious yawning effects reported for humans. Contagious yawning is thought to be based on the capacity for empathy. Contagious yawning in chimpanzees provides further evidence that these apes may possess advanced self-awareness and empathic abilities.

**Yawning on, and in, the Brain**

The neurobiology of yawning has its own varied and tantalizing literature. Wave upon wave of new biomedical technology has promised, and does promise, to yield up great, deep insights. A soon-to-be published article is outstandingly typical:

“Yearning to Yawn: The Neural Basis of Contagious Yawning.” Martin Schürmann, Maike D. Hesse, Klaas E. Stephan, Miiaamaaria Saarela, Karl Zilles, Riitta Hari and Gereon R. Fink, *NeuroImage*, in press, January 2005. The authors, who variously are at Helsinki University of Technology, Espoo, Finland, and at several institutions in Germany, explain that:

[W]e studied brain activation with functional magnetic resonance imaging (fMRI) while subjects watched videotaped yawns.

---

**Solution to Last Issue’s Puzzler**

Because only three (3) of them are actually yawning.
Soft Is Hard

Further evidence why the “soft” sciences are the hardest to do well

compiled by Alice Shirrell Kaswell, G. Neil Martin, and Bissell Mango

All About Dude

“All About Dude,” Scott F. Kiesling, American Speech, vol. 79, no. 3, Fall 2004, pp. 281-305. The author, who is at the University of Pittsburgh, reports that:

The patterns of use for the address term dude are outlined, as are its functions and meanings in interaction. Explanations are provided for its rise in use, particularly among young men, in the early 1980s, and for its continued popularity since then.

To Describe Is to Forget

“To Describe Is to Forget,” Joseph M. Melcher and Jonathan W. Schooler, Journal of Memory and Language, vol. 35, no. 2, April 1996, pp. 231-45. The authors, who are at the University of Pittsburgh, report that:

When participants generate a detailed, memory-based description of complex nonverbal stimuli (e.g., faces) their recognition performance can be worse than nondescribing controls. ... The present study explored this hypothesis by examining the impact of verbalization on the wine recognition of individuals of three categories of wine tasting expertise: Non-wine drinkers, untrained wine drinkers, and trained wine experts. Participants tasted a red wine, engaged in either verbalization or an unrelated verbal activity, and then attempted to identify the target wine from among three foils. As predicted, only the untrained wine drinkers showed impaired wine recognition following verbalization. The results are explained in terms of the differential development of perceptual and verbal skills in the course of becoming an expert.

Colour Goals

“Colour Goals,” M. Crowe and D. O’Connor, Perceptual and Motor Skills, vol. 93, no. 2, October 2001, pp. 455-60. The authors, who are at James Cook University, Townsville, Australia, report that:

In conclusion, there was no significant difference in reaction time to a visual stimulus or success in goal kicking between dark- and light-eyed Rugby League players.
Unappreciated Incompetence
“Why People Fail to Recognize Their Own Incompetence,”
David Dunning, Kerri Johnson, Joyce Ehrlinger and Justin
Kruger, Current Directions in Psychological Science, vol.
12, no. 3, June 2003, pp. 83-7. (Thanks to Toby Sommer
for bringing this to our attention.) Dunning and Kreuger
expand on their Ig Nobel Prize-winning work.

Socially Scientific
Notes on the intriguing behavior of human beings
by Robin Abrahams

The Face of Memory
Memory consists, among other things, of verbal information and of mental images. To illustrate this difference, I will
often start a lecture on cognition by asking students to think of their home address. Then I ask them to think of how many
windows are in their living room. Ostensibly, I do this to illustrate the different processes of recall and imagery. Really,
though, it’s just entertaining to watch 35 faces simultaneously go slack and 35 pairs of eyes roll back in their heads as they
count the windows.

God Is in the Details
Yogi brand Tea likes to feature inspirational sayings on the tags of their tea bags. A recent one urged the reader/drinker to
“Repeat: Me and God, God and me are one.” Indeed. Presumably, you can tell which one God is because He has better
grammar.

Tips from Psychology
The great psychologist Alfred Adler was known for using the coffee shops of Vienna as an alternate workplace, much as
writers and thinkers do today. Had the now-ubiquitous
tip jar been invented in the late 19th century, he would
have had an interesting conundrum to ponder. I am
reliably informed by a barista of my acquaintance that
most people do not contribute to the tip jar. However,
there is one circumstance under which she is always
given a tip: after she has made a mistake. Foam the
perfect latte to order: the customer doesn’t tip. Give
the customer soy milk instead of cream, apologize
profusely, and redo it: the customer tips at least a dollar.
My barista friend swears this never fails. Surely Adler,
who once wrote, “The chief danger in life is that you
may take too many precautions,” would approve of her
insight.
May We Recommend

*Items that merit a trip to the library*

compiled by Stephen Drew, AIR staff

**Starting Backwards from Scratch**


**Damm: Fearful and Confident Pigs**

“The Influence of Adverse or Gentle Handling Procedures on Sexual Behaviour in Fearful and Confident Sows,” L.J. Pedersen, B.I. Damm and A.G. Kongsted, *Applied Animal Behaviour Science*, vol. 83, no. 4, October 20, 2003, pp. 277-90. *(Thanks to Achaz von Hardenberg for bringing this to our attention.)* The authors are at the Danish Institute of Agricultural Sciences, Tjele, Denmark.

**Salesmen: It’s the Little Things**


We welcome your suggestions for this column. Please enclose the full citation (no abbreviations!) and, if possible, a photocopy of the paper.

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**HMO-NO News**

*Health care advice to pass on to your patients*

**Relief Therapy!**

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You will feel almost instant relief -- and the memory of it stay with you, therapeutically, until such time as you make a full recovery.

**HMO-NO.** Because we care about you, and your pocketbook.
A Smattering of Yawns

Some research highlights

compiled by Emil Filterbag, AIR staff

Yawning is a cavernously immense subject. The list of research reports about yawning stretches on and on. You can find yawning bibliographies in several places. One of the best is in Wolter Seuntjens’ Ph.D. thesis, which has been published in book form. (For details about that, see the article “On Yawning; or, The Hidden Sexuality of the Human Yawn,” in this issue of AIR. Another is on the web at www.baillement.com.)

From among the hundreds of yawning reports, here are three, each from a different era. Some yawning scientists consider these to be classics.

Sneezing?

A case is presented of a female patient suffering with almost continuous sneezing spells occasionally interrupted with brief periods of yawning. “Gun powder smoke” was alleged to have initiated the trouble. Standard tests, including inhalation of various mixtures of “gun powder smoke” failed to reveal any allergy. Both the disappearance and the recurrence of the symptoms were brought about through suggestion. It was concluded that the symptoms were purely psychogenic in origin.

Boredom?

Discusses Sartre’s views in Nausea on boredom and the yawn, asserting that boredom is connected with facticity - the aspect of self most closely connected with the being of things--and not with freedom and transcendence. This state is contrasted with an authentic embrace of freedom and transcendence. It is concluded that individuals can become bored with their own freedom and that boredom, or its possibility, plays a role in an ethics of authenticity developing out of Sartre’s thought.

Yawning?
“Yawning?” Francis Schiller, *Journal of the History of the Neurosciences*, vol. 11, no. 4, December 2002. pp. 392-401. Even the abstract is a classic:

Since antiquity yawning has attracted a moderate interest among philosophers, psychologists, physiologists, as well as educators, moralists and physicians. Organisms from birds to men and from the womb to the deathbed were found to be displaying it. While sometimes satisfying to the producer, its display is offensive to the lay observer. Hippocrates had it on his lists of useful ‘natures.’ Aristotle dropped a few words on the matter. Boerhaave elevated its function to the intellect of animals. Haller has commented on its relation to the acoustic system, blood-flow, and baby sleep. Darwin mentioned it in connection with emotional behavior. Some modern authors praised its beneficial effects on respiration and smell. In the 1960s, Ashley Montagu tried to correct the contemporary failure to explain the behavior by the fact of raised CO₂ and arterial compression. It also interested some neurologists, especially in its association with the encephalitis lethargica in the 1920s, with ‘spasmodic yawning,’ with epilepsy, not to speak of hysteria. As to boredom or its stimulus, a 40-page dissertation survives from the court of Frederick the Great of the 18th century condemning idleness, a subject that also inspired Blaise Pascal and William James. But in the Hindu world, public yawning was a religious offense.
Icky Cutesy Research Review

Research reports that are icky and/or cutesy

Compiled by Alice Shirrell Kaswell, AIR staff

Cutesy

“Acquired Growth Hormone Deficiency and Hypogonadotropic Hypogonadism in a Subject With Repeated Head Trauma, or Tintin Goes to the Neurologist,” Antoine Cyr, Louis-Olivier Cyr, Claude Cyr, Canadian Medical Association Journal, vol. 171, no. 12, December 7, 2004, pp. 1433-4. (Thanks to Doug Hatlelid for bringing this to our attention.) The authors explain that:

We describe the unique case of a public figure who is well known for having delayed pubertal development and statural growth (Fig. 1). We believe we have discovered why Tintin, the young reporter whose stories were published between 1929 and 1975, never grew taller and never needed to shave.

Cutesy

“Hogwarts Headaches — Misery for Muggles,” Howard J. Bennett, New England Journal of Medicine, vol. 349, no. 18, October 30, 2003, p. 1779. (Thanks to Ian Davis for bringing this to our attention.) The author, who is at George Washington University Medical Center, Washington, D.C., reports that:

During the past several months, I have evaluated three children between 8 and 10 years of age who presented with a two- to three-day history of generalized headaches.... On further questioning, it was determined that each child had spent many hours reading J.K. Rowling’s latest book in the Harry Potter series.... The presumed diagnosis for each child was a tension headache brought on by the effort required to plow through an 870-page book. The obvious cure for this malady -- that is, taking a break from reading -- was rejected by two of the patients, who preferred acetaminophen instead. In all cases, the pain resolved one to two days after the patient had finished the book.

Cutesy-Icky

On Farting: Bodily Wind in the Middle Ages, Valerie Allen, John Thompson, Palgrave, 2003, ISBN 0312234937. (Thanks to Alistair McCulloch for bringing this to our attention.)

Icky

“Post-Mortem Castration by a Dog: A Case Report,” N. Romain, et al., Medicine, Science, and the Law, vol. 42, no. 3, July 2002, pp. 269-71. (Thanks to Silvan Urfer for bringing this to our attention.) The authors, who are at the Institut Universitaire de Medecine Legale de Lausanne, Switzerland, report that:

A man was found dead in a room where two dogs and a cat were wandering freely. His legs were bare and his underpants presented a few small tears. The deceased exhibited a partial emasculation but with only a small amount of bleeding. No other significant injuries were found, particularly no defence lesions. Death was natural, caused by the rupture of a myocardial infarct. A small piece of connective tissue was found in the gastric contents of one of the dogs. This fragment, as well as bloodstained hairs from its jaws, were analysed for DNA.
Boys Will Be Boys

Research by and for adolescent males of all ages and sexes

compiled by Katherine Lee, AIR staff

The Romance of the Sea

“Seamount Acoustic Scattering: Nocturnal Emissions or Organismal Activities?”
George W. Boehlert, EOS, Transactions of the American Geophysical Union, vol. 69, 1988, pp. 1619 and 1628. (Thanks to Brent Boehlert for bringing this to our attention.)

A Woman’s Choice (1)


A Woman’s Choice (2)


A Man’s Record


Modest Discovery: Piercing Production

“Nipple Piercing and Hyperprolactinemia,” G.A. Modest and J.J. Fangman, New England Journal of Medicine, vol. 347, no. 20, November 14, 2002, pp. 1626-7. The authors, who are at Boston University School of Medicine, report on an unusual patient:

This young woman had a dramatic increase in prolactin and associated galactorrhea [secretion of breast milk] that coincided with the placement of bilateral nipple rings. ... [the] level returned to normal with removal of the rings.

Combinatorics in Equador


This article examines the romantic and sexual next-term relations between young foreign women (gringas) and indigenous men (Otavaleños) in Otavalo, Ecuador. It argues that gringa-Otavaleño relationships represent neither First World dominance over Third or Fourth World people, nor tourism as an expression of patriarchy, but mutual fascination with, romantic misconceptions of, and sometimes economic exploitation of the other gender. The gringas are looking for noble savages and a pre-industrial utopia, while the Otavaleños want sex with a blonde...
AIRhead Medical Review

Improbable diagnoses, techniques, and research

compiled by Bertha Vanatian

Height of Madness
“Is There an Association Between the Use of Heeled Footwear and Schizophrenia?” Jarl Flensmark, Medical Hypotheses, vol. 63, no. 4, 2004, pp. 740-7. (Thanks to Paola Devoto for bringing this to our attention.) The author explains that:

A selective literature review and synthesis is used to present a hypothesis that finds support in all facts and is contradicted by none. ... Cross-sectional prevalence studies of the association between the use of heeled footwear and schizophrenia should be made in immigrants from regions with a warmer climate or in groups of people who began to wear shoes at different ages.

Valiant Fruit Pit (1)

Fruit pit ingestion is an unusual cause of intestinal obstruction -- and even more so in our patient as it led to the discovery of Crohn’s disease.

Valiant Fruit Pit (2)
“Cherry Pit Ingestion Leading to Diagnosis of Colon Carcinoma,” Reinhard P. Mittermair, Hannes Gruber and Reinhold Kafka-Ritsch, American Journal of Surgery, vol. 188, no. 2, August 2004, p. 185. (Thanks to Kristine Danowski for bringing this to our attention.) The authors report on a surprising case, and then conclude that:

Swallowed fruit pits are no doubt much more common than realized. Rarely, they cause symptoms, and more rarely, intestinal obstruction. Patient education might reduce the instances of ingested pits, but on the other hand, ingestion may lead to an earlier diagnosis of a carcinoma.

Coca-Cola and Cancer

The predictions from the theory that large-scale consumption of Coca-Cola would prevent cancer and promote coronary heart disease was tested and found to be supported by the results of a long-scale prospective study. Results replicate those from an earlier study using coffee as a stimulant drug.

Whirligut

We welcome your suggestions for this column. Please enclose the full citation (no abbreviations!) and, if possible, a photocopy of the paper.
Trouble Underfoot

A closer look at a medical research report

by Bertha Vanatian, AIR staff

Do shoes cause schizophrenia? Jarl Flensmark of Malmo wants to know, and in a recent paper in the journal Medical Hypotheses, he explains why.

“Heeled footwear,” he writes, “began to be used more than a 1000 years ago, and led to the occurrence of the first cases of schizophrenia. ... Industrialization of shoe production increased schizophrenia prevalence. Mechanization of the production started in Massachusetts, spread from there to England and Germany, and then to the rest of Western Europe. A remarkable increase in schizophrenia prevalence followed the same pattern.”

The story, if accurate and true, is disturbing. Flensmark sketches the details:

“The oldest depiction of a heeled shoe comes from Mesopotamia, and in this part of the world we also find the first institutions making provisions for mental disorders. ... In the beginning schizophrenia appears to be more common in the upper classes. Possible early victims were King Richard II and Henry VI of England, his grandfather Charles VI of France, his mother Jeanne de Bourbon, and his uncle Louis II de Bourbon, Erik XIV of Sweden, Juana of Castile [and] her grandmother Isabella of Portugal.” All of these individuals are either known or suspected of wearing heeled shoes.

He cites evidence from other parts of the world, too -- Turkey, Taiwan, the Balkans, Ireland, Italy, Ghana, Greenland, the Caribbean, and elsewhere.

“Probably the upper classes began using heeled footwear earlier than the lower classes,” Flensmark points out. He then cites studies from India and elsewhere, which seem to confirm that “schizophrenia first affects the upper classes.”

From these two streams of evidence -- the rise of heels and the increase in documented cases of schizophrenia, Flensmark divines a strong connection. He modestly implies that he is not first to do so. In the year 1740, he writes, “the Danish-French anatomist Jakob Winslow warned against the wearing of heeled shoes, expecting it to be the cause of certain infirmities which appear not to have any relation to it.”

Flensmark boils the matter into a damning statement:

“After heeled shoes is [sic] introduced into a population the first cases of schizophrenia appear and then the increase in prevalence of schizophrenia follows the increase in use of heeled shoes with some delay.”

“I have,” he writes, “not been able to find any contradictory data.”

Lest critics dismiss this as mere hand-waving or foot-tapping, Flensmark explains, biomedically, how the one probably causes the other:

“During walking synchronised stimuli from mechanoreceptors in the lower extremities increase activity in cerebellothalamo-cortico-cerebellar loops through their action on NMDA-receptors. Using heeled shoes leads to weaker stimulation of the loops. Reduced cortical activity changes dopaminergic function which involves the basal gangliathalamo- cortical-nigro-basal ganglia loops.”

Once could conclude that the medical establishment enjoys Flensmark’s discovery. Virtually no one has stepped up to dispute it.
The Ig Nobel Keynote Speeches

transcribed by Nan Swift, AIR staff

These keynote speeches were delivered at the Fourteenth First Annual Ig Nobel Prize Ceremony, on September 30, 2004, at Sanders Theatre, Harvard University. The theme of the ceremony was: Diet.

NOTE: To see video of these speeches, and of the entire ceremony, see the Improbable Research web site: www.improbable.com. For copious details of the ceremony, see AIR 10:6.

Keynote Address: John Trinkaus

John Trinkaus is Professor Emeritus at the Zicklin School of Business, New York City. He was awarded the 2003 Ig Nobel Literature Prize for publishing more than eighty (80) academic reports about things that annoyed him.

Diets go back, probably, to the start of time. Eve had an apple diet that she had Adam on. And we talk about the ancient Greeks -- you think they were talking about philosophical things like the meaning of life? No. They were talking about diets. We had the ancient Romans -- you think they were talking about the design of the new catapult? No. Diets. The medieval period -- you think the lords were talking about increased productivity for the serfs? No. Diets. Elizabeth -- you thought she was talking about expanding the empire? No. Diets.

But none of them worked. Even the famous Trinkaus Brussels Sprouts Diet did not work. [Editor’s note: This is a reference to one of Professor Trinkaus’s Prize-winning papers.] It seems nobody liked Brussels sprouts.

But tonight you’re going to get the straight scoop about diets. Remember, you heard it here first. Here it is. It all can be summed up in four words, and you should remember these four words: Keep your mouth shut.
Off-Keynote Address: **C.W. Moeliker**

C.W. Moeliker is Chief Curator and Head of Communications at the Natuurmuseum Rotterdam. He was awarded the 2003 Ig Nobel Biology Prize for documenting the first scientifically recorded case of homosexual necrophilia in the mallard duck.

I was asked today to address you on the subject of diet. So I will say a few words about duck:

When it is prepared properly, duck can be a surprising addition to any meal.

I thought you might want to know that.

---

Off-Off-Keynote Address: **William Lipscomb**

William Lipscomb is Professor Emeritus at Harvard University. He was awarded the 1976 Nobel Prize in Chemistry “for his studies on the structure of boranes, illuminating problems of chemical bonding.”

Eat, drink, and be merry -- for tomorrow we diet.

---

Kees Moeliker, seen here engaging in a dietary experiment at the Ig Informal Lectures, two days after the Ig Nobel Prize Ceremony. At those lectures, Moeliker delivered a talk, and then joined many of the audience members in sampling luak coffee. Luak coffee is made from beans that were ingested, and then excreted, by the luak (aka palm civet), a bobcat-like animal native to certain parts of Indonesia. The coffee was prepared by University of Guelph professor Massimo Marcone, who also told the audience about his experiments with this, the world’s most expensive variety of coffee.

Photo: Robin Abrahams / AIR.
Do Copied Citations Create Renowned Papers?

by M.V. Simkin and V.P. Roychowdhury
Department of Electrical Engineering, University of California, Los Angeles

Recently we discovered [see cond-mat/0212043] that the majority of citations in scientific papers are simply copied from the lists of references that appear in other papers. Here we show that a model, in which a scientist picks three random papers, cites them, and also copies a quarter of their references accounts quantitatively for empirically observed citation distribution. Simple mathematical probability, not genius, can explain why some papers are cited a lot more than the other.

Greatness? Or Just Simple Probability?

During the “Manhattan Project” (in which scientists created the first nuclear bomb), Enrico Fermi, the physicist, asked General Groves, the head of the project: “What is the definition of a ‘great’ general?”1 Groves replied that any general who had won five battles in a row might safely be called great. Fermi then asked how many generals are great. Groves said about three out of every hundred. Fermi conjectured that, considering that opposing forces for most battles are roughly equal in strength, the chance of winning one battle is $\frac{1}{2}$, and the chance of winning five battles in a row is $\left(\frac{1}{2}\right)^5 = \frac{1}{32}$. “So you are right General,” said Enrico Fermi. “About three out of every hundred. Mathematical probability, not genius.” The existence of military genius was also questioned on basic philosophical grounds by Tolstoy.2

Greatness in Science: Your Papers Are Cited a Lot

A commonly accepted measure of “greatness” for scientists is the number of times other people cite their papers.3 For example, SPIRES, the High-Energy Physics literature database, divides papers into six categories according to the number of citations they receive. The top category, “Renowned Papers” lists those with 500 or more citations.

Let us have a look at the citations to roughly 24 thousands papers, published in Physical Review D in 1975-1994.4 As of 1997 there were about 350 thousands of such citations: fifteen per published paper on the average. However, forty-four papers were cited five hundred times or more. Could this happen if all papers are created equal? If they indeed are, then the chance of being cited is one in 24,000.

What is the chance of be cited, purely at random, 500 times out of 350,000? The calculation for this is slightly more complex. (See Appendix A for details.) The answer is one in $10^{25}$ -- or, in other words, it is zero. One is tempted to conclude that those forty-four papers, which achieved the impossible, must be great.

Copying Those Who Copy Those Who Copy...

Recently we discovered 5 that is very common that when scientists write their own list of citations, they copy many of those citations from the lists of references in other papers. In fact, we now know, this copying is a major component of the citation dynamics in scientific publication.

In this way, a paper that already is cited in one place automatically becomes likely to be cited again in another place. And after it is cited in a second place, it is even more likely to be cited in the future in still more places. In other words, “unto everyone that hath shall be given, and he shall have abundance.”6, 7

This phenomenon is so well known that it has several names: “the Matthew effect,” 6 “cumulative advantage,” 8 and “preferential attachment.” 9

Let’s Look at the Numbers

The effect of citation copying on the probability distribution of citations can be quantitatively understood within the framework of the model of random-citing scientists (RCS), which we will now describe.

When a scientist is writing a manuscript he picks up $m$ random articles,4 cites them, and also copies some of their...
references, each with probability $p$.

This model resembles a couple of other models\cite{8,9,13,14} (see Appendix B for the key differences\cite{9}), and can be easily solved using methods developed to deal with multiplicative stochastic processes.\cite{8,14}

The evolution of the citation distribution (here $N_K$ denotes the number of papers that were cited $K$ times, and $N$ is the total number of papers) is described by the following rate equations:

$$\frac{dN_K}{dN} = 1 - m \times \frac{N_K}{N},$$

$$\frac{dN}{dN} = m \times \frac{q + p(K - 1)N_{K-1} - q + pK^2N_K}{N},$$

which have the following stationary solution:

$$N_K = \frac{N}{m + 1}; \quad N_e = \frac{1 + p(K - 1)}{1 + 1/m + pK}.$$  \hspace{1cm} (2)

For large $K$ it follows from (2) that:

$$N_e = \frac{1}{K}; \quad \gamma = 1 + \frac{1}{m \times p}.$$  \hspace{1cm} (3)

Citation distribution follows a power law, empirically observed in several of our listed references\cite{10,11,12}.

A good agreement between the RCS model and actual citation data\cite{4} is achieved with input parameters $m = 3$ and $p = 1/4$ (see Figure 1).

Now what is the probability for an arbitrary paper to become “renowned”, i.e. receive more than five hundred citations? Iteration of Eq. 2 (with $m = 3$ and $p = 1/4$) shows that this probability is one in 600. This means that about 40 out of 24,000 papers should be renowned. Ergo, greatness is a matter of mathematical probability, not genius.

Figure 1. Outcome of the model of random-citing scientists (with $m = 3$ and $p = 1/4$) compared to actual citation data. Mathematical probability rather than genius can explain why some papers
Greatness and Blasphemy

On one occasion Napoleon said to Laplace “They tell me you have written this large book on the system of the universe, and have never even mentioned its Creator.” The reply was “I have no need for this hypothesis.” Now, Laplace was not against God. He simply did not need to postulate his existence in order to explain existing astronomical data. Similarly, the present work is not blasphemy. Of course, in some spiritual sense, great scientists do exist. It is just that even if they would not exist, citation data would look the same.

Notes

A. The analysis presented here also applies to a more general case when \( m \) is not a constant, but a random variable. In that case \( m \) in all of the equations that follow should be interpreted as the mean value of this variable.

B. These models, though introduced prior to the RCS, are more complicated and difficult to understand for a non-expert reader. This is why discussion of them has been removed into an Appendix.

C. Incidentally, Napoleon was the military commander whose genius was questioned in Reference [2].

D. Additional support for the plausibility of this conclusion comes from the findings of Ref. [5] that few citation slips repeat dozens of times, while most appear just once. Certainly no misprint is more seminal than the other.

References


2. War and Peace, L. Tolstoy.


Appendix A

If one assumes that all papers are created equal then the probability to win $m$ out of $n$ possible citations when the total number of cited papers is $N$ is:

$$P = \frac{n!}{m!(n-m)!} \left( \frac{1}{N} \right)^m \left( 1 - \frac{1}{N} \right)^{n-m}.$$  

Using Stirling formula one can rewrite this as:

$$\ln(P) = n \ln(n) - n \ln(N) - m \ln(m) - (n-m) \ln(n-m) - n \ln(N) + (n-m) \ln(1 - N/m).$$  

Substituting $n = 350,000$, $m = 500$, $N = 24,000$ into the above equation we get:

$$\ln(P) \approx -1.282,$$

or

$$P \approx 10^{-1.282}.$$  

Appendix B

In the model introduced by Vazquez [13] a scientist does a recursive bibliography search. Specifically, when he is writing a manuscript, he picks up a paper, cites it, follows its references, and cites a fraction $p$ of them. Afterwards he repeats this procedure with each of the papers that he cited. And so on.

In two limiting cases ($p = 0$ and $p = 1$) the Vazquez model is exactly solvable [13]. Also in these cases it is identical to the RCS model ($m = 1$ case), which in contrast can be solved for any $p$.

Though theoretically interesting, the Vazquez model cannot be a realistic description of the citation process. In fact, the results of Ref. [5] indicate that there is essentially just one “recursion”, that is, references are copied from the paper at hand, but hardly followed. To be precise, results of Ref. [5] could support a generalized Vazquez model, in which the references of the paper at hand are copied with probability $p$, and afterwards the copied references are followed with probability $R$ (the “reading” probability introduced in Ref. [5]). However, given the low value of this probability ($R \approx 0.05$ according to Ref. [5]), it is clear that the effect of secondary recursions on the citation distribution is negligible.

For effects of second and higher order recursions even in the original Vazquez model are negligible, and it becomes essentially identical to the RCS model. As we find a power law distribution for all non-zero $p$ (see Eq. (3)), this casts doubt on the claim made in [13] that there is a phase transition from power law to exponential distribution around $p = 0.4$.  

An interesting observation is that in the Vazquez model when $p = 1$ the in-component [14] essentially becomes in-degree. This is why Eq.6 of [13] is identical to Eq.59 of [14].

Also Refs [8], [9] by postulating that the probability of paper being cited is somehow proportional to the amount of citations it had already received (no mechanism for this was proposed) were able to explain the power law, which was observed [10], [11], [12] in the distribution of citations.
Textbook Disclaimer Stickers

Add zest to dull teaching materials

These stickers are meant to be stuck onto textbooks. They were composed by Colin Purrington, an associate professor in the biology department at Swarthmore College in Swarthmore, Pennsylvania. Purrington was inspired by officials in Cobb County, Georgia, who in 2002 decreed that their biology textbooks in their schools must carry stickers that say:

“This textbook contains material on evolution. Evolution is a theory, not a fact, regarding the origin of living things. This material should be approached with an open mind, studied carefully and critically considered.”

On Thursday, January 5, 2005, a U.S. federal judge ordered that Cobb County’s stickers be removed. The Cobb County School Board then announced that it will appeal the decision.

**AIR Teachers’ Guide**

Three out of five teachers agree: curiosity is a dangerous thing, especially in students. If you are one of the other two teachers, AIR and mini-AIR can be powerful tools. Choose your favorite hAIR-raising article and give copies to your students. The approach is simple. The scientist thinks that he (or she, or whatever), of all people, has discovered something about how the universe behaves. So:

- Is this scientist right -- and what does “right” mean, anyway?
- Can you think of even one different explanation that works as well or better?
- Did the test really, really, truly, unquestionably, completely test what the author thought he was testing?
- Is the scientist ruthlessly honest with himself about how well his idea explains everything, or could he be suffering from wishful thinking?
- Some people might say this is foolish. Should you take their word for it?

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**The Ig Nobel Books!**


*The Ig Nobel Prizes*, by Marc Abrahams

And... editions in JAPANESE, POLISH, SPANISH, ITALIAN, CHINESE, and other languages

...and the “Best of AIR” Book!

The world’s most untranslatable book has been translated into CHINESE, GERMAN, ITALIAN, and, to some extent, the original ENGLISH:


*Der Einfluss von Erdnussbutter auf die Erdrotation*, Marc Abrahams (ed.), Birkhäuser.

*La scienza impossibile—Il meglio degli <<Improbable Research>>*, Marc Abrahams (ed.), Garzanti

...And the book-length version of the famous AIR-birthed article: *A BriefER History of Time*, by Eric Schulman, W.H. Freeman.
Disclaimer stickers for science textbooks

This textbook contains material on evolution. Evolution is a theory, not a fact, regarding the origin of living things. This material should be approached with an open mind, studied carefully, and critically considered.

This textbook states that the earth is over 4 billion years old. Because some people strongly believe that the earth cannot be this old, the material should be approached with an open mind, studied carefully, and critically considered.

This book promotes the theory of plate tectonics, the gradual movement of the major land masses. Because nobody observed this process, this material should be approached with an open mind, studied carefully, and critically considered.

This textbook suggests that the earth is spherical. The shape of the earth is a controversial topic, and not all people accept the theory. This material should be approached with an open mind, studied carefully, and critically considered.

This textbook contains material on gravity. Gravity is a theory, not a fact, regarding a force that cannot be directly seen. This material should be approached with an open mind, studied carefully, and critically considered.

This book discusses heliocentrism, that the Earth orbits around a centrally located Sun. Because astronomers still disagree over the details of the heliocentric model, this material should be approached with an open mind, studied carefully, and critically considered.

This textbook contains material about special relativity. Special relativity is a scientific theory, and very few scientists fully understand it. This material should be approached with an open mind, studied carefully, and critically considered.

This textbook claims that evolution is not fully accepted by scientists because it is just a theory. The author hopes to confuse you into equating 'scientific theory' with 'cockamamie theory.' To read a short blurb on what a scientific theory is, go to http://wilstar.com/theories.htm.

This book does not contain the word evolution, the unifying principle in biology and an important component of the National Science Standards and the Scholastic Achievement Test. For an overview of what your class is missing, go to http://evolution.berkeley.edu/

This book was anonymously donated to your school library to discreetly promote religious alternatives to the theory of evolution. When you are finished with it, please refile the book in the fiction section.

This book mentions Creationism, New Creationism, Scientific Creationism, or Intelligent Design. All of these beliefs rely on the action of a supernatural entity to explain life on earth. Scientists rejected supernatural explanations for life in the 1800s, and still do today.

This book discusses gods. The existence of entities with supernatural powers is controversial, and many believe that myths, especially other people’s myths, are fictional. This material should be approached with an open mind, studied carefully, and critically considered.

This book contains an evolution disclaimer sticker mandated by your local school board. For fun, submit an article to a local paper that probes the motivations of board members and analyzes the impact of weakened science instruction on the success of students’ college applications.

This book mentions Creationism, New Creationism, Scientific Creationism, or Intelligent Design. All of these beliefs rely on the action of a supernatural entity to explain life on earth. Scientists rejected supernatural explanations for life in the 1800s, and still do today.

This book discusses gods. The existence of entities with supernatural powers is controversial, and many believe that myths, especially other people’s myths, are fictional. This material should be approached with an open mind, studied carefully, and critically considered.

This sticker covers a pre-existing sticker designed to subtly undermine the teaching of evolution in your class. To see the full text of the original sticker, examine the books of children of school board members, who mandated the stickering.

This book discusses evolution. President George W. Bush said, “On the issue of evolution, the verdict is still out on how God created the Earth.” Therefore, until 2008 this material should be approached with an open mind, studied carefully, and critically considered.

http://www.swarthmore.edu/NatSci/cpurin1/
Bends on the Learning Curve

Improbable ideas and explanations collected from classrooms

by Richard Lederer

Here are some small, but provocative discoveries made by science students:

- Green persimmons are a rich source of indigestion.
- People who go to see optimists often find that their eyes and headaches disappear.
- To guard against heart attacks, I need to get my Castor Oil [cholesterol] levels checked.
- When you breathe, you inspire. When you do not breathe, you expire.
- An artery carries blood to or from the heart. I forget which. But the body remembers, and that’s the important thing.
- In looking at a drop of water under a microscope, we find there are twice as many H’s as O’s.

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Abstract:

Change is an all-pervasive phenomenon that should be studied in itself. Analysis of change at different levels can help to organize conceptually and develop categories of change. Drawing upon a survey of several large electronic databases in psychology, sociology and anthropology, the author suggests ways of thinking about the causality of change and then describes three broad categories of change at different levels of experience: changes in objects, changes in behavior, and changes in thinking.

Introduction

This study began as an investigation of change. For example, from mine and m...